

Handbook of Vertebrate Pests in Indian Agricultural Landscape



**All India Network Project on
Vertebrate Pest Management**

**Professor Jayashankar Telangana State Agricultural University
Rajendranagar, Hyderabad, Telangana 500030**



Baya weaver feeding on sunflower seed



Scaly-breasted munia foraging on sorghum seed

Handbook of Vertebrate Pests in Indian Agricultural Landscape

**V. Vasudeva Rao
R.S. Tripathi**



**All India Network Project on
Vertebrate Pest Management**

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“Handbook of Vertebrate Pests in Indian Agricultural Landscape”

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MESSAGE

The vertebrate pests have become a major constraint in agricultural production in the recent years due to intensification of agriculture. The damage done by vertebrate pests to the agricultural production in India is ever increasing. Management of vertebrate pests is entirely different from that of other pests such as insects, diseases and weeds. A considerable amount of information is in place for the traditional pests of the crops, there by designing of the management strategies are comparatively easier. As far as vertebrate pest management is concerned there is a huge gap in understanding behavioural pattern of the animals due to which development of management strategies are tough and time taking. Information pertaining to identification, distribution, habit & habitat and their status in agricultural landscape is of prime importance and need of the hour for formulating such cost effective management strategies.

The effort made by AINP on VPM by bringing the bulletin with all the passport data of important vertebrate pests across the country in major crops is worth appreciating and the publication being brought by the authors Dr. V. Vasudeva Rao and Dr. R. S. Tripathi is of direct relevance to the present precarious situation. I hope this book in most concise form will act as an excellent platform to all the management specialists to be used as a reference book.

I wish to record my appreciation to AINP on VPM in general and to the authors of this book in particular for bringing out such an excellent publication in short span of the time.

Dated the 23rd December, 2019
New Delhi



(T. MOHAPATRA)



Dr. Anand Kumar Singh
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MESSAGE

Agricultural research and development over the decades in India have led to achieve productivity gains in many field crops. Adoption of technologies by the farmers and continuous support of Government policy paved the ways for food grain production at current level of more than 285 million tons in India. However, selective crop growing and global climate change led to unprecedented loss of biodiversity and increased frequency of conflicts between human and wild lives. In addition, crop and grain losses on account of diseases and pests including vertebrates have also spiked in the recent past.

Although the vertebrate pests co-existed for a long time, the extent of damage to agricultural crops now due to them has increased substantially. Sustained solution to this menace is visible using new tools and technologies with ecofriendly thinking. Sharing of experiences and knowledge across the ecologies and communities could be of great assistance to put up a robust resistance against them.

I am delighted to learn that the **Handbook of Vertebrate Pest in Indian Agricultural Landscape** is being published by ICAR-All Indian Network Project (AINP) on Vertebrate Pest Management. The document contains scientific information on range of aspects which are duly validated by domain experts from various Institutions. My compliments to contributors for their hard work. I understand the handbook will serve the interest of students, researchers and other stakeholders.

(Anand Kumar Singh)

20th December, 2019
New Delhi

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MESSAGE

It gives me great pleasure to learn that AINP on Vertebrate Pest Management is coming out with a compilation pertaining to the identification, distribution, habit & habitats, food & status of Vertebrate pests in the agricultural ecosystem titled **“Handbook of Vertebrate Pests in Indian Agricultural Landscape”** at a time when farmers have had to give up farming in certain areas. With respect to the State of Telangana, which is endowed with rich natural wealth, the diversity of the habitats provides ideal environment for highly diverse fauna. Blessed with three agroclimatic zones and varied cropping systems, the State also has to deal with multifaceted pest problems in the form of insects, diseases and weeds for maintaining the sustainability in agricultural production. In recent times, the vertebrate pests have gained prominence, causing huge losses to crops, in view of the intensification of agriculture there by leading to human animal conflicts.

Management of vertebrate pests needs a totally different and guarded approach in view of legal issues arising due to the disregard shown to some of the sections of Wildlife Protection Act. This situation warrants a detailed understanding of the habitat and behaviour related issues of vertebrate pests to formulate sound and ecologically safe management strategies for the same.

The present effort by the authors of the book in compiling the information pertaining to the agriculturally relevant vertebrate pests is the need of the hour and is commendable. This hand book will be of immense use as a referral book for managing the vertebrate pests by the field level functionaries.

I appreciate the effort made by the authors for bringing out a timely and relevant publication that would help all the stakeholders directly involved in farming, particularly the farmers of Telangana in protecting their crops from vertebrate pests.

(V. Praveen Rao)

Date : 24-12-2019
Place : Hyderabad



Dr. Rajan

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MESSAGE

Plant protection, being an important, component in agricultural production, is highly dynamic and the pests, diseases and weeds keep on changing demanding the pest management systems to be more vigilant and accurate. Traditional pests dealt under plant protection are being added up with emerging new pests belonging to a variety of origins. One major among them are vertebrate pests which are now gaining importance over other traditional pests. The animal pests such as rodents, birds and higher animals such as wild boar, monkeys and nilgai are of major concern in the present day agriculture. Unlike other pests, these vertebrate pests need totally different type of management approaches in view of the legal issues pertaining to certain sections of Indian Wildlife Protection Act 1972 (IWPA).

AINP on Vertebrate Pest Management is continuously striving to provide solutions to these issues in major crops of the country. Despite several management practices have been developed, evaluated and recommended for management of the vertebrate pests the fast changing relationship between humans and vertebrates, necessitated a need for a deep insight into the behavioural pattern of these animals. Under such circumstances it is the apt time that a publication in the form of “*Handbook of Vertebrate Pests in Indian Agricultural Landscape*” is being brought out by AINP on VPM under the authorship of Dr. V. Vasudeva Rao and Dr. R.S. Tripathi.

I am of certain opinion that this book will help not only the practitioners of the vertebrate pest management but also to the policy makers to design a sustainable and robust strategy for vertebrate pest management.

I wish best of luck for the team of ANIP on VPM.

Date : 19-12-2019
Place : New Delhi

(Rajan)

INTRODUCTION

The constraints being created by vertebrate pests in agricultural landscape are increasing day by day and assuming the status of major factor in effecting agricultural production. India is the seventh largest country in the world and second largest nation of Asia having ten different biogeographic zones, encompassing varied landscapes with rich natural resources. India also has the rich diversity with approximately 45,000 species of plants, 86,874 species of animals, 390 species of mammals, 1364 species of birds, 456 species of reptiles, 311 species of amphibians and 2546 species of fishes. All the biogeographic zones are facing the issue of vertebrate conflict from a variety of species, in varying degrees. The major species involved in the vertebrate-farmer conflict are Snow Leopard, Himalayan Bear, Monkeys, Wild Ass, Nilgai, Black Buck, Wild Boar, Elephant, Leopard, Sloth Bear, Gaur, Tiger, Porcupine and Crocodile. In Trans-Himalaya and Himalayan zones, the vertebrate-farmer conflict is largely due to Snow Leopard, Himalayan Bear and Monkeys. The Wild Ass and Nilgai problems are proved to be more severe in regions like Thar and Kutch desert zones. The number of problematic species involved in vertebrate-farmer conflict is comparatively similar in Semi-arid, Western Ghats, Deccan Peninsula and Gangetic Plains. In these zones, the predominant species such as Wild Boar, Nilgai, Monkeys and Elephants are responsible for significant vertebrate-farmer conflicts in terms of crop losses while other species like Tiger and Leopard cause direct predation on livestock and human death.

The basic reasons for vertebrate-farmer conflict are the loss of species-specific habitats, habitat degradation and fragmentation, intensive agricultural practices, insufficient prey base and food material, increase in human and livestock population, competitive exclusion of wild herbivores, land use transformation, developmental activities, growing interest in ecotourism and increasing access to nature reserves. The fundamental requirements of space, shelter and food overlap between humans and wildlife merely creating conflict between them.

All the animals and birds listed in India are not responsible for causing vertebrate-farmer conflict. Amongst the 104

species of rodents listed, only 13 species were found to cause crop damage at different growth stages of the crop. In case of birds, of the 1364 species, 63 species were identified as depredatory in nature and causing damage to various agricultural and horticultural crops, mostly during vulnerable stages of the crops. Among the six antelopes reported in India, three species, viz., Blue Bull (*Boselaphus tragocamelus*), Black Buck (*Antelope cervicapra*) and Four-horned Antelope (*Tetracerus quadricornis*) were reported as crop riders. Similarly, of the nine deer species, only Spotted Deer (*Axis axis*) and Sambar Deer (*Rusa unicolor*) have been reported for crop damage in the fringes of forest blocks. Out of 13 species of primates listed, five species are involved in crop damage across different agro-ecological regions. The other species like Elephant (*Elephas maximus*) predominantly causes crop damage, property loss and injuries to humans mostly in forest fringes and also during migration across the ecological corridors. The Wild Boar (*Sus scrofa*) is at present the most problematic species causing significant crop damage across different agro-climatic zones of the country.

In general, agricultural landscape is designated as one of the potential habitat in attracting/providing sustainability and biodiversity. However, the changes in land use options, degradation, intensive cultivation, mono-cropping, extensive use of pesticides and weedicides increased decline of biodiversity to some extent and forced many vertebrates in terms of modifying drastic behavioural activities and food resources. So far, no authentic estimates of the problematic species and their information with respect to pattern and extent of crop damage are available. In this regard, All India Network Project on Vertebrate Pest Management division made an effort by keeping in view of the vertebrate problem in agriculture and listed most important species and their status across different agro-climatic zones of the country.

The present handbook was prepared with the objectives of enthusing and helping agricultural scientists, extension workers and farming community, enabling them to promptly recognize and know about the species involved in crop damage during vulnerable stage of the crops. It is also a useful inventory of the vertebrate pest for the managers to design future management strategies in this regard.

Black Ibis (*Pseudibis papillosa*)

Identification: Dark coloured ibis with long downward curved bill. A conspicuous white patch near the shoulder with red legs.

Size: 68cm

Habit: Forages in shallow waters and marshes, often in well-scattered flocks; usually found in small parties of up to ten individuals.

Food: Feeds chiefly on invertebrates; also fish, lizards and frogs.

Habitat: Lakes, Marshes, Riverbeds and irrigated farmlands.

Distribution: Most of the Indian peninsula.

Breeding Season: March - October

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agriculture Pest Status: Low to moderate.





Greylag Goose (*Anser anser*)

Identification: It has mottled and barred grey and white plumage and an orange beak and pink legs. Large, brownish-grey goose.

Size: 75-90 cm

Habit: Assembles in considerable numbers wherever there is ample food and relative freedom from disturbance. Very shy and wary.

Food: largely herbivorous and feed chiefly on grasses, berries and water plants. Also consume small fish, amphibians, crustaceans, molluscs and insects.

Habitat: Jheels, cultivated lands.

Distribution: Passage migrant and winter visitor. Most common in Northern India across the Gangetic Plains to Assam and Odisha.

Breeding Season: April

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Bar-headed Goose (*Anser indicus*)

Identification: Ashy grey white and brown with two black bands across white head. In flight, its call is a typical goose honking.

Size: 71-76cm

Habit: Gregarious throughout the year.

Food: Feeds mainly at night in cultivation or grasslands.

Habitat: Rivers and large jheels (lakes).

Distribution: Breeds in Ladakh; widespread winter visitor to subcontinent.

Breeding Season: May end to June

IUCN Status: Least Concern

IWPA Status : Schedule IV

Agricultural Pest Status: Low





Lesser Whistling Duck (*Dendrocygna javanica*)

Identification: A small brown and chestnut coloured duck with long legs; chestnut upper-tail coverts. The ring around the eye is orange to yellow. This has been said to aid in producing a whistling sound in flight.

Size: 42 cm

Habit: Gregarious and roosts in the day time in trees or on partly submerged branches.

Food: Feeds mainly on grains, frogs, small fish and invertebrates.

Habitat: Freshwater lakes with ample vegetation.

Distribution: Largely resident species, in most of the Peninsular India.

Breeding season: December - October

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate

Ruddy Shelduck (*Tadorna ferruginea*)

Identification: It has orange-brown body plumage with a paler head while the tail and the flight feathers in the wings are black, contrasting with the white wing-coverts.

Size: 61-67 cm

Habit: Less gregarious than most other ducks, but flocks of thousands have occasionally been recorded at favoured winter quarters. Usually feeds by grazing on banks of rivers and lakes.

Food: Omnivorous and feeds on grasses, grains as well as aquatic and terrestrial invertebrates.

Habitat: Freshwater, salty and brackish lakes and rivers.

Distribution: Breeds in Ladakh, all over India; less common in southern India.

Breeding Season: May and June

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low





Northern Pintail (*Anas acuta*)

Identification: A large, elegant dabbling duck with long, slender neck, long grey bill and pointed tail which is held cocked when swimming. Breeding male has chocolate-brown head with white stripe down side of neck joining white fore neck and breast.

Size: 51-56 cm

Habit: Highly gregarious. Forages at night and in the early morning and evening in marshes and flooded paddy fields, flying back to roost at a daytime refuge.

Food: Seeds, Grains and aquatic invertebrates.

Habitat: Shallow ponds and marshes in open areas.

Distribution: A common winter visitor across the subcontinent.

Breeding Season: April to June

IUCN Status: Least Concern

IWPA Status: Schedule: IV

Agricultural Pest Status: Low

Common Teal (*Anas crecca*)

Identification: A very small duck. Male has dark chestnut head, broad green band behind eye, white stripe along scapulars, and yellowish patch on under tail coverts. Female differs from female Garganey (*Anas querquedula*) in more uniform head pattern, with less prominent supercilium.

Size: 34-38 cm

Habit: Found in both small and large flocks.

Food: It feeds mainly on aquatic invertebrates like insects, molluscs, worms and also seeds and grasses.

Habitat: Jheels. Marshes village ponds.

Distribution: Widespread winter visitor to the sub-continent.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low





Garganey (*Anas querquedula*)

Identification: Breeding male has down curved white stripe behind eye, brownish breast contrasting with grey flanks and long black-and-white striped scapulars. In flight, one can see blue-grey forewing and broad white trailing edge to green speculum.

Size: 37-41 cm

Habit: Gregarious; gathers in aggregations of thousands in certain favoured conditions.

Food: Omnivorous and feed on aquatic plants, seeds, tubers, shoots, leaves, aquatic invertebrates, small fish and frogs.

Habitat: Found on all types of water: marshes, jheels, village tanks and shallow lakes with adequate vegetation; also coastal lagoons.

Distribution: Widespread winter visitor to the subcontinent, one of the region's most common and widespread wintering duck.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Grey Francolin (*Francolinus pondicerianus*)

Identification: A plump grey brown francolin with light reddish brown blotches on upper parts. Throat buffish with a broken black neck line.

Size: 33 cm

Habit: Typically found in pairs or in groups up to eight birds, which roost together in small thorny trees or shrubs. Well adapted to drought conditions.

Food: Seeds, grains as well as insects, particularly termites.

Habitat: Dry open grass plains and open scrub, near cultivation, also stony semi-desert and sand dunes.

Distribution: Resident. All over the subcontinent.

Breeding Season: March – October.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate



Indian Peafowl (*Pavo cristatus*)

Identification: Male has blue neck and breast, and spectacular glossy green train of elongated upper tail covert feathers with numerous ocelli. Female lacks elongated uppertail coverts, has whitish face, throat and white belly. Primaries of female are brown (chestnut in male).

Size: Male 180-230 cm, Female 90-100 cm

Habit: Gregarious, keeping in small flocks of usually one cock and three to five hens when breeding, Roosts in all trees.

Food: Omnivorous and eat seeds, insects, fruits, vegetables, small mammals and reptiles.

Habitat: Forests, near villages and cultivated country.

Distribution: All over the subcontinent.

Breeding Season: January-September, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule I

Agricultural Pest status: High





Common Crane (*Grus grus*)

Identification: Adult is mainly greyish and best identify from other cranes by largely black head and foreneck with white stripe behind eye, extending down neck sides; red patch on crown is visible only at close range.

Size: 110-120 cm

Habit: Highly gregarious, mainly vegetarian.

Food: Omnivorous and largely eats vegetable matter.

Habitat: Winter crops, rivers with sandbanks, jheels and reservoirs.

Distribution: Winter visitor. Common in northwest India.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Sarus Crane (*Grus antigone*)

Identification: Overall grey colour and the contrasting red head and upper neck.

Size: 156 cm

Habits: Normally keeps in pairs or family parties of three or four birds, although sometimes in flocks of 70 or more. Very tame in central and western India and Nepal where it is undisturbed. Usually makes regular daily flights to and from roosting sites.

Food: Feeds on tubers, roots, insects, crustaceans, and small vertebrate.

Habitat: Open cultivation, well-watered country, marshes, wheels and rivers.

Distribution: Most common in northern and central India.

Breeding Season: July – December, varying locally

IUCN Status: Vulnerable

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Demoiselle Crane (*Grus virgo*)

Identification: It has a long white neck stripe. The black on the fore neck extends down over the chest in a plume.

Size: 90-100 cm

Habit: Highly gregarious; feeds in morning and late afternoon in winter crops and stubble fields, retire for rest of day to sandbanks in rivers and edges of jheels.

Food: Insects such as Coleopteran, lizards, worms and small vertebrates.

Habitat: Cultivation, Ponds, large rivers with sand banks and reservoirs.

Distribution: Winter visitor most common in northwestern India, Gujarat and Madhya Pradesh.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Grey-headed Swampphen (*Porphyrio poliocephalus*)

Identification: Large size, purplish-blue colouration, and huge red bill and red fronted shield. Has long, stout red legs and huge feet and white undertail coverts.

Size: 45 - 50 cm

Habits: Typically found in small parties and in bigger numbers in extensive marshes. Diurnal and, where undisturbed, is not shy.

Food: Feeds on aquatic plant tubers.

Habitat: Large marshes and extensive reed beds bordering the lakes.

Distribution: Mostly resident throughout the subcontinent.

Breeding: April – September, varying locally

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate to high



Black-tailed Godwit (*Limosa limosa*)

Identification: Large wader with long bill, neck and legs; white wing bars and white tail-band. In breeding plumage, male has rufous-orange neck and breast, with blackish barring on under parts and white belly; breeding females are duller.

Size: 36-44 cm

Habits: Feeds mainly by walking slowly and probing in open soft mud or in shallows, also by picking prey from the surface.

Food: Mainly eats invertebrates and also aquatic plants.

Habitat: Marshes, estuaries, creeks.

Distribution: Widespread winter visitor. Locally common, except for parts of the northwest and east and Himalaya.

IUCN Status: Near Threatened.

IWPA Status: Schedule IV

Agricultural Pest Status: Low





Ruff (*Calidris pugnax*)

Identification: A deep-bellied, slim necked wader with rather small head. Has medium-length, slightly downcurved bill and rather long yellowish or orangey legs. In all plumages, lacks prominent supercilium and in flight, shows narrow white wing-bar and prominent white sides to upper tail-coverts. Male is considerably larger than female.

Size: 20-32 cm

Habits: Gregarious, often in small parties or flocks with other waders; often congregates in flocks of many thousands on first arrival in NW India and when on passage.

Food: Insects and plant material.

Habitat: Jheels, Marshes, cultivated lands and mudflats.

Distribution: Abundant winter visitor, mainly to west and southern parts of the subcontinent.

IUCN Status: Least Concern.

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Blue Rock Pigeon (*Columba livia*)

Identification: Grey tail with blackish terminal band, broad black bars across greater coverts and tertials/secondaries. Feral populations differ considerably in coloration and patterning. Feral birds live in villages and towns; wild birds around cliffs and ruins.

Size: 33 cm

Habits: Lives in colonies all year. Wild birds roost on cliff ledges and in fissures in cliffs and ruins.

Food: Cultivation, mainly on seeds, also eats green shoots.

Habitat: Cultivated lands and urban areas.

Distribution: Resident. Throughout much of the subcontinent. Both feral and wild population occurs.

Breeding Season: Almost all the year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: High

Eurasian Collared Dove (*Streptopelia decaocto*)

Identification: Grey-buff pinkish grey overall, a little darker above than below, with a blue-grey under the wing. Sandy-brown with black half-collar white sides to tail, and white underwing coverts.

Size: 32 cm

Habits: Found singly or in pairs when breeding and in small parties during winter, may form flocks when migrating, ground feeders.

Food: Seeds and grains.

Habitat: Open dry country with cultivation, scrub and dry forests.

Distribution: Resident, local migrant. Throughout the subcontinent, except most of Himalaya and SW India.

Breeding Season: All year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Moderate



Red Collared Dove (*Streptopelia tranquebarica*)

Identification: Male has deep ash-grey head and black hindneck collar and striking greyish-white sides to tail. Male easily distinguished from the similar Eurasian collared dove by blue-grey head, pinkish-maroon mantle and wing coverts and deep pink underparts.

Size: 23 cm

Habit: Found singly or in pairs when breeding, in small parties in winter; may form flocks when migrating. Less associated with human habitation and cultivation than the other doves.

Food: Seeds, grains and grass.

Habitat: Open country and cultivation with some trees, shrub jungle and light woodland; in Pakistan, it is known to prefer more wooded areas such as canal or roadside plantations.

Distribution: Locally fairly common, subjected to local movements. Throughout the subcontinent except most of the northwest, N Himayala, S and extreme E India.

Breeding Season: All year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low to moderate



Spotted Dove (*Streptopelia chinensis*)

Identification: Slender with long-waged tail. Grey and pink brown above, spotted upperparts and black and white chequered patch on neck sides.

Size: 30 cm

Habits: Found singly or in pairs when breeding, and small parties in winter, may form flocks when migrating.

Food: A ground feeder, gleaning grains from cultivation. Seeds and grains.

Habitat: Cultivated lands, open scrub forests.

Distribution: Resident, subject to local movements. Throughout the subcontinent,

Breeding Season: Almost all year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Low to moderate



Laughing Dove (*Streptopelia senegalensis*)

Identification: Small dove with fairly long tail, brownish-pink head and underparts, uniform underparts and black stippling on upper breast.

Size: 27 cm

Habits: Found singly or in pairs when breeding and in small parties in winter, may form flocks when migrating and congregates in flocks where food is abundant.

Habitat: Garden cultivation habitations, stony and scrub-covered hills and open forest.

Food: Grains, Seeds and ground insects.

Distribution: Resident throughout the subcontinent, except most of the Himalaya, uncommon in northeast.

Breeding Season: Almost all year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Alexandrine Parakeet (*Psittacula eupatria*)

Identification: One of the largest parakeets with red bill and maroon shoulder-patch. Male has black chin-stripe joining pink and turquoise hind collar, both of which are lacking on female and immature.

Size: 53 cm

Habits: Quite wary, flocks in large numbers to raid orchards or crops, has wasteful feeding habits. Flies with deliberate wingbeats accompanied by a harsh loud scream.

Food: Seeds, fruits and vegetables.

Habitat: Forests, orchards, cultivated areas, gardens and around the habitations.

Distribution: Common and widespread in the north and sporadic in south.

Breeding Season: December – May, varying locally.

IUCN Status: Near Threatened

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Rose-ringed Parakeet (*Psittacula krameri*)

Identification: Green head and blue green tip to tail. Male has black chin-stripe joining pink collar. Female lacks the chin stripe and pink collar and is all green.

Size: 42 cm

Habits: A very adaptable species often associated with human habitation and cultivation.

Food: Seeds, fruits and vegetables.

Habitat: Forests, orchards, towns and villages.

Distribution: Resident much of the subcontinent, except parts of the northwest, northeast and Himalaya.

Breeding Season: December-July, Varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Very high



Plum-headed Parakeet (*Psittacula cyanocephala*)

Identification: Male has a red head which shades to purple-blue on the back of the crown, nape and cheeks while the female has blueish-gray head. There is a narrow black neck collar with verdigris below on the nape and a black chin stripe that extends from the lower mandible. There is a red shoulder patch and the rump and tail are bluish-green, the latter tipped white.

Size: 36 cm

Habits: Less associated with people, roost communally in large numbers in bamboo clumps or forest. Birds continuing to screech even after dark. In flight, it can weave between forest trees with great agility.

Food: Seeds, fruits, flowers and vegetables.

Habitat: Forests, orchards, cultivated lands and villages.

Distribution: Subcontinent, south of the Himalayan foothills.

Breeding Season: December-June, Varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Moderate to high.



Slaty-headed Parakeet

(*Psittacula himalayana*)

Identification: Adult is usually readily distinguished by grey head, stout red bill and yellow-tipped tail. Possibly confusable with female Plum-headed Parakeet but is larger, head is a darker slate-grey with black chin stripe and half-collar. Male differs from female in having a maroon shoulder patch.

Size: 41cm

Habits: Very agile in flight, keeping in compact flocks, the bird twisting and turning through the trees in unison, then suddenly gliding upwards to alight.

Food: Wild fruits, nuts, berries, nectar and seeds.

Habitat: Hill forests and cultivated lands.

Distribution: Resident in Himalayas from Pakistan to Arunachal Pradesh.

Breeding Season: December – June, varying locally

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low





Malabar Parakeet (*Psittacula columboides*)

Identification: It is bluish grey with a long yellow-tipped tail. The black neck ring is complete in both males and females. Female has an all-black bill and has only the black collar while the male has a bluish-green lower edge to the black collar and the upper mandible is red with a white tip.

Size: 38 cm

Habit: Similarly like plum headed parakeet.

Food: Seeds, fruits, particularly wild figs, flowers and nectar.

Habitat: Mainly tropical sub-tropical broad leaved ever-green forest, sometimes also moist deciduous forests.

Distribution: Endemic resident, restricted to Western Ghats.

Breeding Season: January - March

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate



Asian Koel (*Eudynamys scolopaceus*)

Identification: Male is glossy black with a pale greenish grey bill, and bright red eye. Female is down above, spotted and barred with white and buff and white below, strongly barred with dark brown, also has prominent red eye.

Size: 43 cm

Habits: Typically keeps concealed in dense foliage when not feeding, although many sun itself from a treetop in early morning. Usually seen when it flies hurriedly from one tree to another.

Food: Omnivorous, variety of insects, caterpillars, small vertebrates berries and nectar.

Habitat: Open woodland, gardens, orchards, around cultivation and village parks and other areas with scattered trees in towns and cities.

Distribution: Locally common, throughout subcontinent.

Breeding Season: March - October

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Great Hill Barbet (*Psilopogon virens*)

Identification: Largest of the barbets and unmistakable with large pale yellow bill, violet-blue head, Brown breast and mantle, olive-streaked yellowish underparts and red undertail-coverts. The only barbet with bluish head and red undertail-coverts.

Size: 33 cm

Habits: Usually nest singly or in small groups of five to six, but congregates in feeding parties of up to 30 or more in fruit-laden trees.

Food: Fruits and insects.

Habitat: Forest and orchards.

Distribution: The Himalaya.

Breeding Season: April - July

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



White-cheeked Barbet (*Psilopogon viridis*)

Identification: Adult brownish bill. White super cilium and cheeks contrasting with brown crown and nape, whitish throat and bold white streaking on breast.

Size: 23cm

Habit: Found singly or in small feeding groups.

Food: Fruits and figs.

Habitat: Hill forest, groves and gardens.

Distribution: Endemic, from the Surat Dangs south through the Western Ghats and east to central Tamil Nadu.

Breeding Season: December - June

IUCN Status: Least Concern (Endemic resident)

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate





Black-rumped Flameback (*Dinopium bengalense*)

Identification: Golden-yellow upperparts, black-and-white faces pattern and black streaking or scaling on under parts. adult male has a red crown and crest; female has white spotted black forehead and fore crown and scarlet hind crown and crest.

Size: 26-29 cm

Habit: Usually with mixed foraging parties of insectivorous birds. Forages at all level in the trees and also often on the ground.

Food: Feeds on insects and nectar.

Habitat: Open forest, forest plantations, groves, trees around villages and cultivation.

Distribution: Common in low country and foothills, throughout the subcontinent in plains and foothills.

Breeding Season: Throughout the year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agriculture landscape: Low

Greater short-toed Lark (*Calandrella brachydactyla*)

Identification: Small pale lark. It is dark-streaked greyish-brown above, and white below, and has a strong pointed bill that is pinkish with a grey culmen. It has a pale supercilium, dark patches on each side of its neck and a dark tail.

Size: 14 cm

Habit: Similar to those of other larks. Gregarious on its wintering grounds, running and flying about restlessly, and birds twisting and turning in unison. Unobtrusive on ground; will squat and freeze if alarmed.

Food: Feeds on insects and seeds.

Habitat: Dry pasture stubble, fallow, semidesert dry mudflats.

Distribution: Widespread winter visitor to the subcontinent but apparently absent from parts of northeast, central and southern India.

IUCN Status: Least Concern

IWPA Status: Schedule: IV

Agricultural Pest Status: Low



Indian Golden Oriole (*Oriolus kundoo*)

Identification: Male is striking in the typical oriole black and yellow plumage; female and immature variable, usually with streaking on under parts and yellowish-green upper parts.

Size: 25 cm

Food: Fruits and insects.

Habitat: Open deciduous woodland, groves, orchards, and trees at the edge of cultivation.

Distribution: Locally common, partial migrant and passage migrant. Usually summers in the plains and up to 1800 m in Himalaya, common in the peninsula in winter in plains and up to 1800 m in hills. Indian subcontinent and central Asia.

Breeding Season: April - August

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low





Black-hooded Oriole (*Oriolus xanthornus*)

Identification: Adult male has glossy black head and neck contrasting with golden-yellow body, bold yellow outer edges to black tertials and secondaries and mainly yellow tail. Adult female similar but with olive-yellow mantle.

Size: 25 cm

Habit: A typical oriole, but not shy. Frequently seen flying from tree to tree. Sometimes go with itinerant bands of insectivorous birds.

Food: Insects and fruit, especially figs.

Habitat: Open broad-leaved forest, groves, well-wooded country, and wooded gardens.

Distribution: Locally common in plains and hills up to 1200 m in Himalaya, rarely to 1700 m in peninsular hills.

Breeding Season: Throughout the year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Common Starling (*Sturnus vulgaris*)

Identification: Adult is metallic green and purple; heavily marked with buff and white in winter. Juvenile is dusky brown with whiter throat.

Size: 21 cm

Habit: Cultivation and damp grass land thorn scrub and mulberry groves. Huge flocks at rich feeding sources follows locust swarms and helps to control the pest.

Food: Seeds, insects, small vertebrates and fruits.

Habitat: Open fallow lands, orchards, meadows, vicinity of habitations.

Distribution: Sedentary resident close to the Indus river system, summer visitor to Kashmir; winter visitor mainly to northern subcontinent.

Breeding Season: March - June

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Rosy Starling (*Sturnus roseus*)

Identification: Adult has blackish head with shaggy crest, pinkish mantle and underparts, and blue green gloss to wings. In non-breeding and first inter plumage much duller than shown; pink of plumage partly obscured by buff fringes; black by greyish fringes, juvenile mainly sandy brown with stout yellowish bill and broad pale fringes to wing feathers.

Size: 21 cm

Habit: More gregarious and often forms huge flocks at rich feeding sources. Follow locust swarms and help to control this pest, runs about, actively chasing locusts, sometimes springing into the air to catch them.

Food: Fruits, seeds, nectar and insects.

Habitat: Open areas, cultivation and damp grassland, thorn scrub and mulberry groves.

Distribution: Winter visitor to Gujarat and peninsular India and passage migrant in NW subcontinent.

Breeding Season: June-December, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Moderate to high



Common Myna (*Acridotheres tristis*)

Identification: A large myna with yellow orbital skin and white wing patch. Adult has glossy black on head and breast merging into maroon-brown of rest of the body. Has large white patch at base of primaries, white tip tail and white vent. Juvenile is duller than adult, with brownish-black rather than glossy black head and paler brown throat and breast.

Size: 25 cm

Habit: Usually in pairs or small parties. Bold, tame and pugnacious. Commonly scavenges in built-up areas and flocks often follow grazing cattle or the plough or feeds in cultivation.

Food: Omnivorous, insects, reptiles, seeds, grains and fruits.

Habitat: Agricultural lands, villages, towns, cities and isolated houses in forest or desert.

Distribution: Resident throughout the subcontinent, except parts of northwest and northeast.

Breeding Season: February-December, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Moderate to high



Asian pied Starling (*Sturnus contra*)

Identification: Adult is black and white, with orange orbital skin and large, pointed yellowish bill. Juvenile has black plumage replaced by brown.

Size: 23 cm

Habit: A typical starling, mainly terrestrial. Seeks insects by digging in damp ground, also eats cereal grain, ripe fruit and flower nectar. Usually in small parties in the non-breeding season and forms noisy communal roosts, sometimes of up to a few hundred birds.

Food: Insects, grains and fruits.

Habitat: Open cultivation, damp grassland, refuse dumps and sewage farms, often near habitation or grazing animals.

Distribution: Resident, subject to local movements. Mainly from NE Pakistan east to NE India and south Bangladesh, and Telangana, N Andhra Pradesh, absent from severe arid areas.

Breeding Season: March-October

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Low



Bank Myna (*Acridotheres ginginianus*)

Identification: Orange-red orbital patch, orange-yellow bill, and tufted forehead. Wing-patch, underwing-coverts and tail-tip orange-buff. Adult is bluish grey with blackish cap; juvenile duller and browner than adult.

Size: 23 cm

Habit: More gregarious, usually keeping in small flocks in breeding season and in large flocks in winter.

Habitat: Cultivation, damp grassland, near villages, often associated with grazing animals.

Distribution: Widespread resident in northern and central India.

Breeding Season: March - August

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low to moderate





Red-billed Blue Magpie (*Urocissa erythrorhyncha*)

Identification: Black head, blue upper parts, extremely long, graduate, black-and-white-tipped blue tail. Adult differ from that species in having red or orange-red bill white hindcrown and nape, and brighter turquoise-blue mantle and wings.

Size: 65-68 cm

Habit: Usually found in pairs or flocks of 10 birds. Parties fly across clearings in single file, but when moving over long distances they usually fly low over treetops.

Food: Invertebrates, seeds and fruits.

Habitat: Mixed forests, cultivation and gardens.

Distribution: Locally fairly common, subjected to altitudinal movements. Himalaya from W Himachal Pradesh east to Nepal; NE India.

Breeding: April - June

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Rufous Treepie (*Dendrocitta vagabunda*)

Identification: Slate-grey wood, Rufous-brown mantle, pale grey wing-panel, buffish under parts and rump, and whitish sub terminal tail-band. Juvenile has brown hood.

Size: 42 cm

Habit: Usually in pairs or family parties, sometimes in larger gatherings at rich food sources.

Food: Omnivorous; eats fruit, nectar, invertebrates small animals, birds eggs, young and carrion.

Habitat: Open forest consisting of scrub, plantations and gardens.

Distribution : Throughout Indian subcontinent.

Breeding Season: March - July

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agriculture Pest Status: Low

House Crow (*Corvus splendens*)

Identification: A two-toned corvid has black crown, face and throat contrasting with paler nape, neck and breast, giving rise to collared appearance. Adult has gloss to black of plumage and collar is well defined and becomes paler with wear.

Size: 40 cm

Habit: Gregarious when feeding and roosting. Adopted to exploit human activity. Bold and cunning, omnivorous and opportunistic feeder.

Food: Small reptiles and mammals, insects and other small invertebrates, eggs, grains and fruits.

Habitat: Closely associated with human activity, occurs in villages, towns, cities, gardens and nearby cultivation.

Distribution: Throughout Indian subcontinent except parts of northwest, northeast and Himalaya.

Breeding Season: January-September, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: High



Large-billed Crow (*Corvus macrorhynchos*)

Identification: All black plumage separates this species from House crow. Lacks any of the contrast between head and neck which is shown by even the darkest races of House crow. Bill is stouter and has more pronounced curve to culmen.

Size: 46-59 cm

Habit: Usually keeps singly, in pairs or in small groups, but roost communally in large numbers.

Food: Omnivorous.

Habitat: Around human habitations in well-wooded country and at forest edges and clearings alpine pastures above the treeline, also villages, towns and cities, avoids deserts and semi-deserts.

Distribution: Resident, subject to some altitudinal movements. N Baluchistan, Pakistan, Himalaya from N Pakistan east to Arunachal Pradesh, NE India and Peninsular India.

Breeding Season: November-September, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low to moderate



White-eared Bulbul (*Pycnonotus leucotis*)

Identification: A crested bulbul with white cheeks, brownish-grey upperparts and yellow vent. Told from white-eared bulbul by prominent forward-pointing brown crest, brown nape and black crescent at base of white ear-coverts.

Size: 20 cm

Habit: Bold, cheerful and confiding. Very lively and conspicuous, often sits on the top of the perches, posturing and flicking wings; keeps on the move, flying from bush to bush.

Food: Fruits and insects.

Habitat: Dry habitats: open scrub jungle, hillside with scattered wild raspberry, hedgerows, bushes around towns and villages and secondary growth.

Distribution: Endemic to the subcontinent. Resident subject to local movements. N Pakistan east to Arunachal Pradesh.

Breeding Season: March - June

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agriculture Pest Status: Low





Red-vented Bulbul (*Pycnonotus cafer*)

Identification: It is easily identified by its short crest giving the head a squarish appearance. The body is dark brown with a scaly pattern while the head is darker or black. The rump is white while the vent is red. The black tail is tipped in white.

Size: 20cm

Habit: Bold, tame and quarrelsome. Keeps in pairs or in small loose flocks, according to the season.

Food: Feeds mainly on fruits and berries; also insects.

Habitat: Deciduous forest, secondary growth, gardens, road side avenues.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Common Babbler (*Turdoides caudatus*)

Identification: A brownish buff babbler with dark-streaked upperparts and cross-barred tail yellowish. Additional features are slightly smaller size, whitish or greyish-buff colouration to under parts, yellowish legs and feet, and darker, more orange-brown iris.

Size: 23 cm

Habits: Associates in small flocks of six to 20 birds, each flock maintaining its own territory all year. Flock members keep up a constant conversation of whistles, trills and squeaks as they move about.

Food: Ants, caterpillars, beetles, grasshoppers, termites, spiders and grains.

Habitat: Thorn scrub, open country with scattered low bushes, grass clumps, occasionally gardens and cultivation with open areas.

Distribution: Most of the Northwest and peninsular India.

Breeding Season: March-October, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest status: Low





Large Grey Babbler (*Turdoides malcolmi*)

Identification: A large, pale grey babbler with darker grey mottling on upperparts and prominent white sides to tail. Greyish pink throat and breast, lacking dark mottling, pale grey forehead, more prominent grey mottling on mantle, longer and more graduated tail with dull whiter feathers, brownish grey legs and feet, darker bill.

Size: 28 cm

Habit: Gregarious, noisy and excitable; birds calling to each other almost continuously and joining in a chorus of squeaking and chattering when alarmed.

Food: Mostly insects; also grain, seeds and berries.

Habitat: Open dry, scrubby areas, cultivated lands, gardens and around villages.

Distribution: Most of the peninsular India but abundant in Deccan.

Breeding Season: March-September, varying locally.

IUCN Status: Least Concern

IWPA Status : Schedule IV

Agricultural Pest Status: Very low

Jungle Babbler (*Turdoides striata*)

Identification: The sexes are identical, drably coloured in brownish grey with a yellow-bill. The upperparts are usually slightly darker in shade and there is some mottling on the throat and breast.

Size: 25 cm

Habit: Gregarious birds that forage in small groups of six to ten birds, a habit that has given them the popular name of seven sisters.

Habitat: Deciduous forest, agricultural lands, gardens also plantations along the roads.

Food: Wide range of invertebrates, mainly insects.

Distribution: Endemic to the subcontinent. Except parts of the northwest, northeast and north Himalaya.

Breeding Season: January - October

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agriculture Pest Status: Low





Streaked Laughing Thrush (*Garrulax lineatus*)

Identification: A small laughing thrush. All races occurring in the subcontinent are readily identified by small size, fine dark streaking on crown and nape, fine white streaking on mantle and under parts and grey-tipped olive-brown tail with diffuse black subterminal band on outer feathers.

Size: 20 cm

Habit: Keeps in pairs or in small parties of three to six birds. Usually found close to the ground.

Food: Insects, including moths, caterpillars, small flies, ants, spiders and berries.

Habitat: Bushes at edges of cultivation and along roadsides, scrub-covered hill sides and secondary growth.

Distribution: Common breeding resident in Northern mountains from west Pakistan to Arunachal Pradesh, moves down to foothills in winter.

Breeding Season: March - September

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low

Purple Sunbird (*Nectarinia asiatica*)

Identification: The male is glossy metallic purplish black on the upper parts with the wings appearing dark brown. They have a down-curve bill with brush-tipped tubular tongues that aid in nectar feeding.

Size: 10 cm

Habit: A typical sunbird. Sometimes makes short aerial sallies like a flycatcher. The male sings from the top of a bare tree or telegraph wire, while occasionally jerking from side to side and raising his wings to reveal his bright orange and yellow pectoral tufts.

Food: Small insects, spiders, nectar and also fruits.

Habitat: Open deciduous forest and gardens.

Distribution: Throughout the subcontinent, except parts of the northwest and northeast.

Breeding Season: Throughout the year, varying locally.

IUCN Status : Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



House Sparrow (*Passer domesticus*)

Identification: Male has grey crown, black throat and upper breast, chestnut nape and brownish mantle. Female has buffish supercilium and unstreaked greyish white underparts.

Size: 15 cm

Habit: Gregarious outside the breeding season, forming large communal roosts in favourite trees in woods. Flocks numbering hundreds or thousands forage in grain or stubble fields.

Food: Feeds chiefly on seeds, especially of crops such as cereals, also shoots, buds, food scraps, refuse and insects.

Habitat: Closely associated with human habitation and cultivation.

Distribution: Resident, throughout most of subcontinent, except parts of the northwest and northeast.

Breeding Season: Throughout the year, varying locally.

IUCN Status: Least Concern.

IWPA Status: Schedule IV

Agricultural Pest Status: Low to moderate



Yellow -throated Sparrow (*Petronia xanthocollis*)

Identification: Adult male distinguished from other sparrows by long, fine bill, uniform brownish-grey head and upperparts and yellow patch on lower throat. Bill is black in breeding and brown with yellowish base in non-breeding season.

Size: 13.5 cm

Habit: Usually in pairs or small groups in the breeding season.

Food: Mainly seeds, including those of cultivated cereals and small berries.

Habitat: Open dry forest, thorn scrub, hedges, trees at the edges of cultivation and riverine forest.

Distribution: Common and widespread resident and local migrant.

Breeding Season: End of February – June

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low





Baya Weaver (*Ploceus philippinus*)

Identification: In breeding, male has yellow crown and dark brown ear-coverts and throat. Male non-breeding, female and juvenile have brownish-buff upperparts. In non-breeding males and females resemble female house sparrows.

Size: 15 cm

Habit: Highly gregarious throughout the year. Forages by hopping on the ground, seeking fallen seeds and by picking seeds from the top of upright grass stems. Roost communally all year.

Food: Grains, seeds and insects.

Habitat: Paddy-fields, grassland and scrub with scattered trees and mangroves.

Distribution: Resident, throughout subcontinent, except parts of the northwest, northeast and Himalaya.

Breeding Season: March-October, vary locally and depending on arrival of the monsoon.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: High

Streaked weaver (*Ploceus manyar*)

Identification: Breeding male has golden-yellow crown contrasting with dark brown sides of head and throat, and heavily streaked breast and flanks. Bill is brownish black.

Size: 14 cm

Habit: Similar to those of Baya weavers. In winter, feeds chiefly on the flowering heads of *Phragmites* reeds, *Typha* bulrushes and *Saccharum* grasses by clinging to the upright stems. Roost communally in reedbeds in winter.

Food: Seeds, grains and insects.

Habitat: Reedbeds and seasonally flooded areas. Breeding February – October, varying locally.

Distribution: Resident. Mainly Pakistan, SE Nepal, Assam, Gujarat, Bangladesh and Sri Lanka.

Breeding Season: February-October, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate



Black-Breasted Weaver (*Ploceus benghalensis*)

Identification: Male in breeding plumage has brilliant lemon yellow to golden-yellow crown, similar to other male weavers, but has broad black band separating it from the fulvous-white underparts. In non-breeding male, female and juvenile lack yellow on crown brown like rest of upper plumage but always show black on breast.

Size: 14 cm

Habits: Very similar to those of Baya weaver. Gregarious all year, often associated with other weavers.

Food: Seeds and insects.

Habitat: Tall, damp, seasonally flooded grassland, and reedy marshes along rivers and canals also well irrigated cultivation in winter. Breeding June-September.

Distribution: Endemic to the South Asia. Found throughout plains from Panjab to Arunachal Pradesh.

Breeding Season: June-September.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate





Indian Silverbill (*Euodice malabarica*)

Identification: Adult has white rump and upper tail coverts, black tail with elongated central feathers and rufous buff barring on flanks. Juvenile has buffish under parts, lacks flank barring and has shorter tail.

Size: 11-11.5 cm

Habit: When not breeding, roosts communally in old nest usually of weavers, or their own.

Food: Feeds mainly on seeds, but also insects

Habitat: Prefers drier habitats than other finches: cultivation, dry grassland, open thorn scrub and scrub desert.

Distribution: Subject to some local movements. Throughout the subcontinent, except parts of northwest, northeast and Himalaya.

Breeding Season: Throughout the year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate to high

Scaly-breasted Munia (*Lonchura punctulata*)

Identification: Adult has chestnut throat and upper breast, and whitish underparts with dark scaling. Juvenile has brown upperparts and buffish underparts; bill black.

Size: 10.7-12 cm

Habit: A typical finch. In the non-breeding season, associates in flocks and roosts communally in sugarcane fields and Lantana thickets, sometimes with other munias and weavers.

Food: seeds, small berries and insects

Habitat: Open scrub, agricultural lands, gardens.

Distribution: Resident most of the Indian subcontinent .

Breeding Season: Throughout the year, mainly May-September.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate to high





Black-headed Munia (*Lonchura malacca*)

Identification: Black head, neck and upper breast, rufous-brown upperparts, and black belly centre and undertail-coverts. Lower breast and flanks are white nominate of peninsula and Sri Lanka. Juvenile has uniform brown upperparts and buff to whitish underparts; bill blue-grey.

Size: 11.5 cm

Habit: A typical finch. When not breeding, associates in flocks of up to 100 or more, sometimes with Scaly-breasted munias.

Food: Grass seeds, paddy; occasionally insects.

Habitat: Reed beds, scrubland, grassland and paddy fields.

Distribution: Resident. Mainly from C Uttar Pradesh east to Bangladesh also Eastern, central and southern India and Sri Lanka.

Breeding Season: Almost any month, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate

Common Rose finch (*Carpodacus erythrinus*)

Identification: A compact, stout-bill. Male is rather plain-faced with deep red head, breast and rump, red wash to streaked upperparts, and red of under parts extending onto flanks and lower belly. Female differs from other rose finches with streaked under parts by combination of short, stout bill, rather plain face with beady black eye, bold streaking on whitish under parts, and narrow whitish or buff median and greater covert wing bars.

Size: 14.5-15 cm

Habits: Gregarious in the non-breeding season, often in flocks of up to 30 birds, in pairs when breeding. Sometimes perches inactively for quite a long period. Has an undulating flight like other rose finches.

Food: Seeds, buds, shoots, leaves, fruit and berries, nectar; also insects and larvae and other arthropods.

Habitat: Agricultural lands, bushes, gardens and open forest.

Distribution: Resident, Breeds in Himalaya; winters over most of India.

Breeding Season: June-September

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Red-headed Bunting (*Emberiza brunniceps*)

Description: A long-tailed bunting, breeding male has bright yellow under parts, green upperparts and a brownish-red face and breast.

Size: 16 cm

Habit: A typical bunting. Highly gregarious in winter and on passage, sometimes forming huge flocks with black headed bunting which inflict widespread damage on standing crops.

Food: Feeds on seeds; during breeding season feeds mostly on invertebrates.

Habitat: Open agricultural lands.

Distribution: Common winter visitor most of the country and passage migrant.

Breeding Season: July to September

IUCN Status :Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate



Crested Bunting (*Melophus lathami*)

Description: Male is bluish-black with prominent crest, and with mainly chestnut wings and tail. Female has shorter crest, and chestnut edges to feathers of wings and tail.

Size: 17 cm

Habit: Very similar to those of other buntings. Keeps singly or in pairs in the breeding season and in small loose parties at other times.

Food: Small grass seeds, grains and some weed seeds.

Habitat: Rock covered mountainsides and open country, sometimes cultivated areas.

Distribution: Resident in India, subject to altitudinal movements in the Himalaya and local movements in the central Madhya Pradesh and northern Odisha.

Breeding Season: April - August

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Rhesus macaque *Macaca mulatta*

Description: The rhesus macaque is brown or grey in colour and has a pink face, which is bereft of fur. Its tail is of medium length and averages between 20.7 and 22.9 cm. Adult males measure about 53 cm on average and weigh about 7.7 kg. Females are smaller, averaging 47 cm in length and 5.3 kg in weight. Living close association with humans, this is an aggressive, found in malty male group, dominated by single male (Alpha male).

Size: 47-63 cm

Distribution: They have the widest geographic ranges of any non-human primate, occupying a great diversity of altitudes throughout Central, South and Southeast Asia.

Habitat: Urban area, deciduous and ever green forests, and scrub.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule II

Agricultural Pest Status: High





Bonnet Macaque *Macaca radiata*

Description: A peculiar cap of long hair, arranged in a whorl, it is a medium sized species with a tail that is longer than its body. Its colour changes from brown in winter to scraggy buff-grey in summer. The bonnet macaque feeds on fruits, nuts, seeds, flowers, invertebrates and cereals.

Size: 35-65 cm

Distribution: This is the common commensal monkey of south India and can be seen around the temple.

Habitat: Urban areas, deciduous and ever green forests, and scrub.

Breeding Season: Throughout the year.

IUCN Status: Least Concern

IWPA Status: Schedule II

Agricultural Pest Status: High

Nilgai *Boselaphus tragocamelus*

Description: India's largest antelope, a sturdy thin-legged antelope, adult males are iron-blue, while females and calves are sandy brown. Sloping back, a deep neck with a white patch on the throat, a short crest of hair along the neck and terminating in a tuft, and around two white spots each on its face, ears, cheeks, lips and chin. The ears are tipped with black.

Size: 130-150 cm.

Distribution: Throughout India, south of Himalaya up to Karnataka except deserts, West Bengal and North East.

Habitat: Dry deciduous savanna country, open scrub and agriculture lands.

Breeding Season: Mating usually occurs from December to March, but breeding can occur through the year.

IUCN Status: Least Concern

IWPA Status: Schedule III

Agricultural Pest Status: High



Spotted Deer *Axis axis*

Description: The chital's coat is pinkish fawn, marked with white spots, and it's under parts are also white. The dorsal parts are golden to rufous, completely covered in white spots. The abdomen, rump, throat, insides of legs, ears and tail are all white. A conspicuous black stripe runs along the spine. The tail, 20 cm long, is marked by a dark stripe that stretches along its length.

Size: 85-90 cm

Distribution: Throughout India, except Jammu, Kashmir, high Himalaya and deserts, East to Assam.

Habitat: Deciduous forest, semi-evergreen forests, open grasslands, especially around fringes.

Breeding Season: Breed in April or May, mating from May to August.

IUCN Status: Least Concern

IWPA Status: Schedule III

Agricultural Pest Status: Moderate



Black buck *Antelope cervicapra*

Description: The blackbuck is a moderately sized antelope. Adult males are dark brown to velvet black with white under sides. The colour varies with the season and region. It appears darkest after the rains, while males found in southern India are dark brown. Female and young are fawn above and white below. Sexual dimorphism is prominent, as males are heavier and darker than the females. The long, ringed horns, that resemble corkscrews, are generally present only on males.

Size: 73-83 cm

Distribution: Throughout India except deserts, west coast, and north east.

Habitat: Arid grassland, open scrub, and semi-desert areas.

Breeding Season: Mating occurs throughout the year, with the most rutting activity in March-April and August-October.

IUCN Status: Vulnerable

IWPA Status: Schedule I

Agricultural Pest Status: High





Four-horned Antelope *Tetracerus quadricornis*

Description: A small, light brown antelope, reddish when young, turning yellower with age. Males have two pairs of horns, the front pair is very short. Dark stripes run along each of its legs.

Size: 55-65 cm

Distribution: Indian Subregion in the Asian Indomalayan Region and occurs only in India and Nepal.

Habitat: Dry deciduous forests with open grasslands, and scrub, prefers undulating terrain.

Breeding Season: Mating takes place during the rainy season from July-September.

IUCN Status: Vulnerable

IWPA Status: Schedule I

Agricultural Pest Status: Low



Wild boar *Sus scrofa*

Description: This ancestor of the common pig is dark greyish-brown with a black mane. The body of the wild boar is compact; the head is large, the legs relatively short. The fur consists of stiff bristles and usually finer fur. The colour usually varies from dark grey to black or brown, but there are great regional differences in colour; even whitish animals are known from central Asia. During winter, the fur is much denser.

Size: 90-180 cm

Distribution: Throughout India, except Jammu, Kashmir, high Himalaya and deserts.

Habitat: Scrub, grassland, mixed deciduous and evergreen forest.

Breeding Season: Wild boars are capable of reproducing at any time during the year. Mating is usually dependent on the climate, which can directly affect food availability.

IUCN Status: Least Concern

IWPA Status: Schedule III

Agricultural Pest Status: High

Indian Porcupine *Hystrix indica*

Description: This thickest rodent is covered with long black and white quills with a long crest of spines flowing from the fore head to the middle of the back

Size: 60-90 cm

Distribution: Throughout India.

Habitat: Rocky hill sides, open country sides and deciduous, evergreen forests and scrub. Inhabits burrows, thick bush, and tall grass.

Breeding Season: Throughout the year.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate



Black-naped Hare *Lepus nigricollis*

Description: It is reddish-brown with black hair mixed throughout tail, black on top and a black patch on the back of its neck. It is more sandy –yellow in colour.

Size: 40-50 cm

Distribution: Throughout India.

Habitat: Open scrub, short grassy patches and over grazed forest land. Throughout India, except high altitude and mangroves.

Breeding Season: Throughout the year.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Low



Asian Elephant *Elephas maximus*

Description: One of the largest terrestrial organisms and is considered a megafauna species. They have gray skin that is covered with hair. In adults, this hair is sparse, while calves have thicker brown hair long trunk and sail-like ears make it one of the most easily recognized animals. It has a rounded or humped back as opposed to the saddle – shaped one of the African elephant. Its trunk ends in one tip or ‘finger’ as opposed to two, it has a two – domed forehead, and its ears are smaller in size. Only males have large tusks, while females have very small dental protuberances called ‘tushes’.

Size: 245 – 275 cm

Distribution: Indian subcontinent and Southeast Asia, including the islands of Sri Lanka and Sumatra besides Iraq and China.

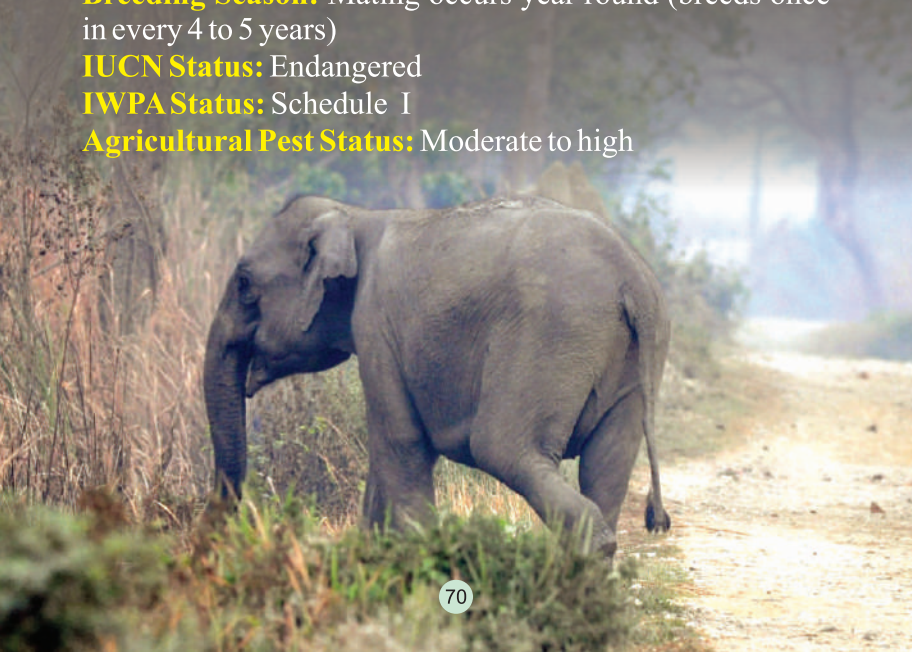
Habitat: Asian elephants live in a variety of habitats in the tropical region, including grasslands, tropical evergreen and moist deciduous forests, and scrub. They typically live in elevations from sea level to 3,000 meters

Breeding Season: Mating occurs year round (breeds once in every 4 to 5 years)

IUCN Status: Endangered

IWPA Status: Schedule I

Agricultural Pest Status: Moderate to high



Indian Jackal *Canis aureus indicus*

Description: A medium-sized canid, the Jackal's scraggy, buff-grey coat is not as smooth as the fox's, not as dense as the wolf's. The buff coat is interspersed with black hair while the underside, throat and the area around the eyes and lips are white. Jackals found in North India are larger and heavier than their peninsular counterparts.

Size: Body length 60 – 75 cm

Habitat: Urban and semi-urban areas and forests.

Distribution: Throughout India

Breeding season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule II

Agricultural Pest Status: Low





Indian Flying Fox *Pteropus giganteus*

Description: Indian fruit bat is often seen roosting in hundreds on large trees. It is chestnut brown with large black ears and huge black wings that often folds over its tan or orange belly. Its back is blackish-brown with scattered pale hair.

Size: 16.18.5 cm

Distribution: Throughout India.

Habitat: Large trees in avenues near crop land, and human habitations.

Breeding Season: Breeds yearly, with mating occurring from July to October, and births occurring from February to May.

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Moderate



Fulvous Fruit Bat *Rousettus leschenaulti*

Description: This bat is fulvous brown on the back, while its belly is grey. In older bats, the flanks turn grey. Its fur is fine and soft and males have longer yellowish hair on the throat. It has a short tail.

Size: 7.5-8.6 cm

Habitat: Roost in caves, tunnels, buildings and rarely on trees.

Distribution: Throughout India except deserts and high mountains.

Breeding Season: October to December

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Moderate



Greater Short Nosed Fruit Bat *Cynopterus sphinx*

Description: Soft and silky, brown-furred has large, fur-linked coffee-brown ears and dark brown wings marked by pale “Fingers”.

Size: 6.4-7.9 cm

Distribution: Throughout India except desert and high Himalaya.

Habitat: Favours palm and fig trees in gardens, farmland and forests, although it roosts on roofs as well.

Breeding Season: October to March

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Moderate

Three-striped Palm Squirrel *Funambulus palmarum*

Description: The palm squirrel is about the size of a rat, with a bushy tail that is slightly shorter than its body. The back is a grizzled, gray-brown with three conspicuous white stripes which run from head to tail. The two outer stripes run from the forelegs to the hind legs only. It has a creamy-white belly and a tail covered with interspersed, long, black and white hairs.

Size: 12-15 cm

Distribution: Throughout India.

Habitat: Urban and rural areas. It is found naturally in India (south of the Vindhyas) and Sri Lanka.

Breeding Season: Breeding takes place in grass nests during the autumn.

IUCN Status: Least Concern

IWPA Status: Schedule IV

Agricultural Pest Status: Moderate



Northern Palm Squirrel *Funambulus pennantii*

Identification : Medium-sized squirrel weighing 90g with a bushy tail. The dorsal side is greyish brown with five distinctly white stripes separated by four white bands. Tail is white with a blackish midportion and tail tip is whitish. Soft fur covers the small ears.

Size: 230 to 356 mm

Distribution: Northern palm squirrels are native to India, Iran, Nepal, and Pakistan, but are now also found in Afghanistan. Within India, its distribution ranges from south of Sikkim to the northern district of Dharwad in Karnataka, from Baluchistan to West Bengal. It is also reported from Andaman Islands.

Habitat: Northern palm squirrels are widespread and flexible in their habitat preferences. Generally it lives close to human habitation, orchards, gardens, parks and in areas with fairly good numbers of trees; wild populations found in forests with dense cover of trees and rocky habitats.

Breeding season: Throughout the year, varying locally.

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Causes severe damage to fruits like pomegranate, sapota, grapes, guava, jujube, pineapple and mango.



House rat *Rattus rattus*

Description: Also called roof rat, coconut rat, black rat, devil rat. Medium size rodent. Body weighs 70 and 300 g. Body slender, covered with black to gray colour. Nasal bone (snout) is elongated pointed. Nocturnal rodent. Very good climber. Tail is naked, bicolour and ringed, longer than head-body. Vector for bacterial leptospirosis.

Size: 140-200 mm

Distribution: Distributed throughout the country. Breeds round the year. Gestation period-22 days, litter size 6–10.

Habitat: Commensal rodent and also found in plantation crops.

Breeding Season: Throughout the year

IUCN Status: Vermin

IWPA Status: Schedule V

Agricultural Pest Status: Serious pest in residential areas, godowns and plantation crops.



Lesser Bandicoot Rat *Bandicota bengalensis*

Description: Robust rodent weighing 200-300 g. Round head with broad muzzle piggy appearance. Dorsum covered with dark brown coloured coarse hair. Tail is shorter than body. Nocturnal and fossorial. Hoards food grains in the burrows. Borrows are characterized by the presence scooped soil before the entrance; the openings may be closed with soil plugs.

Size: 14-25 cm

Distribution: Distributed throughout India.

Habitat: Well established in cultivated fields, pasture lands, forests, high mountains, intertidal mangrove zones, semi-arid regions and urban areas. Gestation period is 22 days. Litter size is 01-11.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Major pest in irrigated rice; responsible for huge loss in all stages of production and even in storage.





Larger Bandicoot Rat *Bandicota indica*

Description: Robust rodent weighing more than 500 g. The shaggy, blackish brown body has a dark grey-brown upper parts with a profusion of long, black hairs. Sides are grey with a few long, black hairs. Short, light grey fur occurs on the ventral surfaces. It has a dark and naked, scaly tail and dark feet with light-coloured claws. Tail is shorter than body. Nocturnal and fossorial. No signs of scooped soil before the entrance of burrow and the openings will be open always.

Size: 14-25 cm

Distribution: Throughout India except in arid and mountain regions

Habitat: Lives near buildings in compounds of houses in rural and urban. Gestation period is 23 days. Litter size is 01-08.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Major pest in horticultural crops like coconut, coco and other fruit crops, irrigated rice; extensive damage to flooring is done in addition to the damage in storage.

Common Rat *Rattus norvegicus*

Description: It is known as brown rat, weigh up to 140 to 500 g, has blunt nose and small eyes, tail is longer than the body, snout is pointed, fur black in colour and abdominal side whitish. They are omnivorous.

Size: 400 mm

Distribution: Found on every continent of the world except Antarctica.

Habitat: Nocturnal and digs extensive burrow systems along foundation of buildings, under concrete or near rubbish piles in soil

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural pest status: It is one of the most important pests of stored grains and fruits. It is also a vector plague and leptospirosis diseases. It is a serious pest in coconut and cocoa.



House Mice *Mus musculus*

Description: Dark house mouse, it has whitish under surface is found in the fields as well as in the houses, living in burrows, below rocks and in crevices. It is omnivorous and causes damage to grains and stored food material. They are small rodents (15 g) with bicolour tail longer than head and body. The dorsum is dark brown to sandy.

Size: 65 to 95 mm

Distribution: Throughout world .

Habitat: Generally live in close proximity with humans in houses, barns, granaries, etc. They also occupy cultivated fields, fencerows, and even wooded areas, but they seldom stray far from buildings. Gestation period of 18 days, litter size 1-8.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Minor pest in agricultural crops.



Indian Field mouse *Mus booduga*

Description: Tiny mouse weighing about 10 g, slender and short body. Tail is naked, bicolored. Nocturnal and fossorial.

Size: 5.6-7.5 cm

Distribution: Distributed in peninsular India to Cutch, Punjab, Uttar Pradesh, Bihar, Odisha and Northeast.

Habitat: Present in rice, wheat, maize and crop fields (especially in irrigated fields). Breed round the year. Gestation period 19-22 days. Litter size -1-13.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Minor pest, but due to their larger numbers, the accumulated loss will be more.



Soft-furred Field Rat *Millardia meltada*

Description: Small rodent weighs 40-60gm. Body with soft fur, dorsum light grey. Tail bi-colored, equal to the head-body. Nocturnal, fossorial, burrows are small and simple. Associated with *Tatera indica* and *Mus booduga* in northern part and with *Bandicota bengalensis* in southern part.

Size: 100-160 mm

Distribution: Distributed from Punjab and Uttar Pradesh southwards to western and southern India. Also found in foothills of eastern Himalayas.

Habitat: Distributed in semi-arid areas where moderate soil moisture and vegetation are available.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Pest in rain-fed paddy, rice-sugarcane, cotton and groundnut ecosystems.



Indian Gerbil *Tatera indica*

Description: It is distinct from rats by its tail, hind feet, ears and eyes. The tail, unlike the naked type in rats and mice is covered with hair, which terminates at the tip as a tuft. The hind feet are longer than fore feet. Eyes are large and ears round. Generally light brown in colour. The body weight of Indian gerbils ranges from 100 – 150 g for males and 70 – 100 g for females.

Size: 150 – 170 mm

Distribution: India, Sri Lanka, Pakistan, as far west as Syria, and north to Afghanistan and Nepal. The species is ubiquitous occurring throughout India from Himalaya to Kanyakumari.

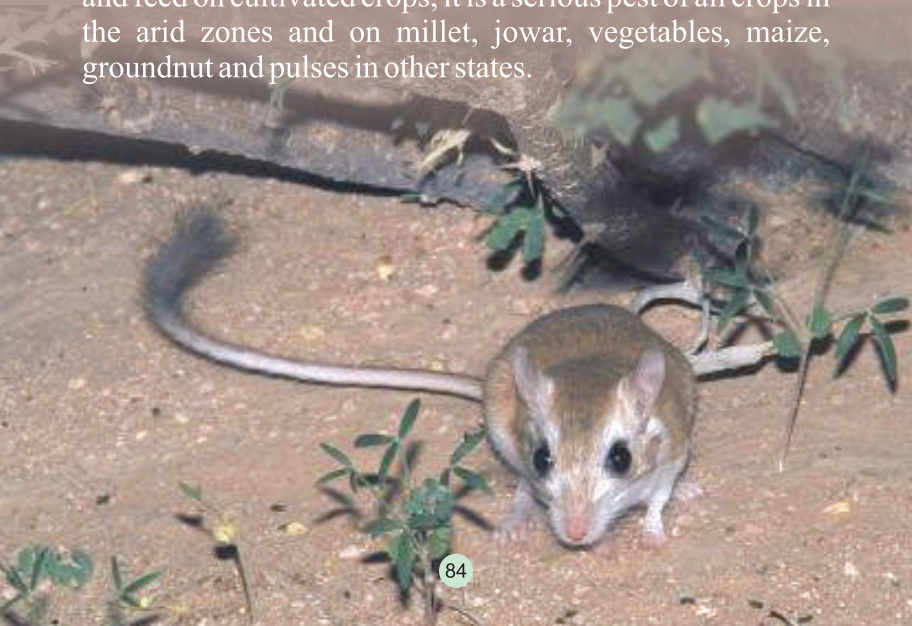
Habitat: Prefer sandy plains and grasslands that allow extensive burrowing. They will dig extensive burrows with chambers for resting, food storage and sleeping.

Breeding Season: Throughout the year

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Because of its preference to live and feed on cultivated crops, it is a serious pest of all crops in the arid zones and on millet, jowar, vegetables, maize, groundnut and pulses in other states.



Desert Gerbil *Meriones hurrianae*

Description: Adult body weight of is 40 – 160 g, colour is sandy grey brownish dorsally and white to off-white ventrally. Tail is pale with black or dark brown tussle of hair at the tip.

Size: 206 - 307 mm

Distribution: In India it is restricted to Northwest desert of Rajasthan, adjoining regions of Punjab. Haryana and North West Gujarat.

Habitat: It lives in all habitats of the Thar Desert, prefers sandy habitats. Next in preference is the ruderal habitat followed by gravel plains. Burrows are elaborate, criss-crossing like a honeycomb. They can go up to 1 m deep and have an emergency exit hole. Sand dunes banks, wind blown moulds of sand consolidated beneath desert shrubs and plants are also preferred sites for burrows.

Breeding Season: Throughout the year with two peaks in February and July, a third peak was observed during September – November.

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Common pest of bajra, wheat, chillies, vegetable crops, grass and other vegetation.



Short tailed Mole Rat *Nesokia indica*

Description: The species is relatively large weighing more than 200g. The heavily built body is dull to brown on the dorsum and has a lighter ventral side. The head is short and rounded and the muzzle is short and broad. Tail is short. Fur is short and rough. The feet and tail are scantily haired.

Size: Head body 140–250 mm, Tail 88–129 mm.

Distribution: In India it is found only in Punjab, Rajasthan, Haryana, Uttar Pradesh, Himachal Pradesh and Union territory of Delhi.

Habitat: It prefers bunds in cultivated fields along water channels but also occurs in natural vegetation and garden lawns. Prefers soft soil with high moisture content and good vegetation cover.

Breeding Season: Throughout the year in captive conditions, in nature breeding occurs only during winters.

IUCN Status: Least Concern

IWPA Status: Schedule V

Agricultural Pest Status: Feeds on leaves and roots of lawn grass and crops. It is reported to feed on barley, wheat, potato, groundnut, sugarcane, mustard, brinjal, tomato, water melon and forestry plantations in arid zone.



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Indian palm squirrel devouring on sunflower seed



Rhesus macaque troop raiding on paddy crop



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